Combined innovation policy: Linking scientific and practical knowledge in innovation systems

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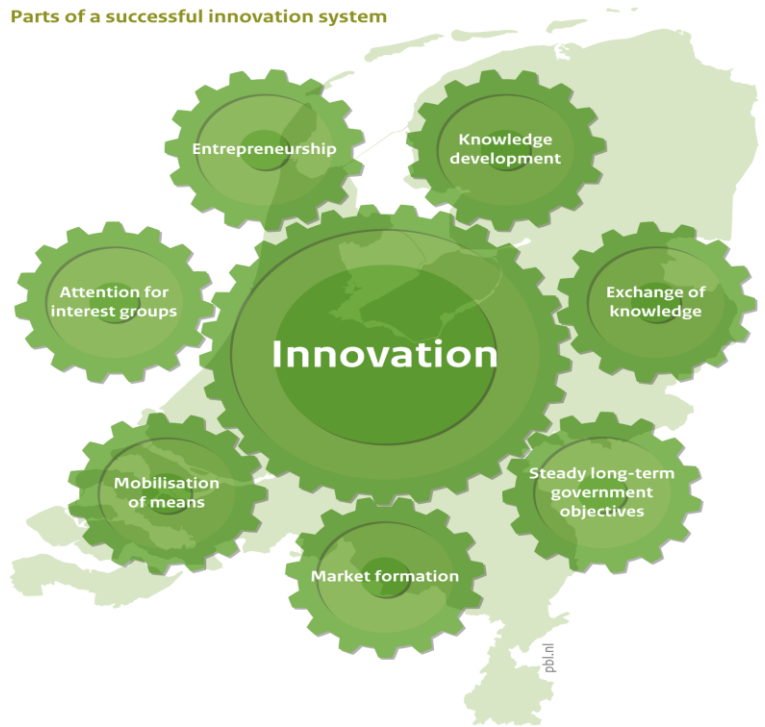
Background

- There is no one-size-fits-all solution when it comes to innovation policy
- Firms within and across industries differ greatly in terms of their innovation processes
  - Food is a good example, especially when discussing the role of R&D

- A system-perspective on innovation and policy – systemic failures
  - Production structure
  - Knowledge infrastructure
  - Support structure



Two modes of innovation (Jensen et al. 2007)

- **STI – Science, Technology and Innovation**
  - Production and use of scientific and technical knowledge (exploration)
  - Codifiable knowledge (know-why and know-what)
  - STI calls for supply-driven policy
    - » Commercializing research results
- **DUI – Doing, Using and Interacting**
  - Experience-based demand pull (exploitation)
  - Tacit knowledge (know-how and know-who)
  - DUI calls for demand-driven policy
    - » Supporting NPD to specific markets
- **Combining STI & DUI**
  - More product innovative (Jensen et al. 2007)

STI and DUI policies for regional innovation systems

INNOVATION MODE SUPPORTED	
STI mode (science driven)	DUI mode (user driven)
Aim: Increase the R&D capacity of the actors in the system and increase cooperation between firms and R&D organisations *Typical innovation policy:* - Subsidies for R&D infrastructure (laboratories, research and technology centres, research groups etc.) - Support for commercialization of research results - Increase the R&D capacity of organisations - Support joint R&D-projects between firms and universities. - Support higher education programs - Support (financial) for increasing mobility between academia and industry	Aim: Foster organizational and inter-organisational learning and increase cooperation between in particular producers and users *Typical innovation policy*: - Support on-the-job learning and organisational innovations - Matchmaking activities and building and sustaining existing networks - Stimulate trust building and joint innovation projects between actors in the value chain (producers-suppliers-users-consumers). - Stimulate joint projects between competing and auxiliary businesses (e.g. food-health)

Two examples – Centres of expertise

- **NCE Culinology**
  - Support the food industry in Rogaland County, Norway
  - Aim: Strengthen the knowledge platform and the innovation capability within industrial gastronomy and culinary differentiation in order to increase value added and profitability

- **Skåne Food Innovation Network**
  - Supporting the food industry in Skåne County, Sweden
  - Aim: promote innovation within the industry to ensure industrial renewal, new path creation and path extension

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The Rogaland food innovation system

- Comparatively large food industry
  - DUI innovation dominates
  - Internal firm focus with regard to innovation activity

- A fairly strong knowledge infrastructure
  - Including 5 research organisations, 11 development organisations, and 3 education and training organisations

The NCE Culinology project

- Part of the Norwegian Centres of Expertise (NCE) programme from 2007
- NCE Culinology arrange workshops / meeting, brand the food industry, and coordinate joint innovation projects
- Molecular gastronomy: Linking of DUI and STI innovation modes

Know-how (and who) – DUI: Cooks use their experiences, and experiment with preparing tasty dishes

Know-what and why – STI: Researchers document various chemical processes and characteristics of tasty dishes, develop theoretical models

The Skåne food innovation system

- Large food industry
  - Production, processing and auxiliary industries

- Strong knowledge infrastructure

- Support infrastructure: Awarded national VINNVÄXT program 2003-2013
  - “Advance the functionality, dynamics and efficiency of the regional innovation system” within a chosen area of strength
  - Promote industry-university linkages

Skåne and Rogaland

- The industry: Mature, ”low-tech”, incremental innovations and improvements, limited in-house R&D
- Strong knowledge infrastructure
  - Rogaland: More focus on applied research
  - Skåne: More focus on basic research
- Relatively high number of innovative firms

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Focus areas in NCE Culinology and VINNVÄXT

NCE Culinology 2011	VINNVÄXT 2003	VINNVÄXT 2011
Molecular gastronomy	Functional food/food and health	Cooperation and strategies
Consumer insight	International consumer marketing	A taste of Skåne
Process optimisation	Large scale food and eating	Tomorrow's meal service
Open innovation	Innovation and theory and practice	Innovation and entrepreneurship
		Jobs and career
STI policy	**STI policy**	**Combined**

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Conclusions: Combining STI and DUI

For DUI firms

- Limited in-house R&D affect: [i] ability to generate substantial innovations [ii] absorptive capacity (AC) of firms
- Investing in research may be ineffective when AC is low
- Necessary to invest in strengthening AC:
  - Recruitment of highly educated personnel
  - Establishing closer links between university and industry
  - Help with building networking competencies

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Conclusions: Combining STI and DUI

For STI firms

- Problems with commercialising research results
- Limited experience and competence regarding management, markets and consumers, processing and distribution etc.

Necessary to strengthen the “implementation capacity”

- Establish closer links with industry

For both STI and DUI firms: capability building is central

- Capacity to absorb external (scientific) knowledge - **absorptive capacity**
- Capacity to commercialize ideas and research results - **implementation capacity**

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The full paper is found at: Isaksen & Nilsson (2013) “Combined Innovation Policy: Linking Scientific and Practical Knowledge in Innovation Systems”, European Planning Studies, vol 21, issue 12, p.1919-1936.
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